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Corrosion of Aluminum Alloys by Chlorinated Hydrocarbon/Methanol Mixtures

Laboratory investigations have shown that water-free mixtures of Freon MF (trichlorofluoromethane) and methanol vigorously attack aluminum alloys, such as 7075, 2024, and 2014, which contain significant amounts of copper. At room temperature, a dry, 400-gram, 1:1 mixture of Freon MF and methanol dissolved a 1×1×0.035-inch alloy specimen in less than an hour. The reaction is inhibited by the addition of 5 to 13 percent of water to the methanol.

Other aluminum alloys are also attacked by the dry mixture of Freon MF and methanol, but at lower rates. Dry mixtures of methanol and other chlorinated hydrocarbons, such as chloroform, methyl chloroform, and carbon tetrachloride, are also corrosive to the aluminum alloys.

Notes:

1. Freon MF alone did not attack the aluminum alloys at room temperature; pure methanol had only a slight corrosive effect on the alloys.

2. Inquiries concerning the results of this investigation may be directed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B67-10442

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D. C. 20546.

Source: W. S. DeForest
of North American Aviation, Inc.
under contract to
Manned Spacecraft Center

(MSC-11365)

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